

REMARKS

Applicants respectfully request consideration of the subject Application. The enclosed is responsive to the Examiner's Office Action mailed March 22, 2007. Claims 1-27 are pending for examination. Claims 11-27 have been withdrawn from consideration. Claims 1-10 were rejected.

Rejections Under 35 U.S.C. §112

The Examiner has rejected claims 1-10 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Applicants respectfully disagree with the rejection and submit that the disclosure enables a person skilled in nanotechnology art and/or fullerene chemistry art to make and/or use the Invention. The Examiner has stated, "the [nanotechnology] field as a whole is still subject to some degree of unpredictability owing to the fact that it deals with structures on the molecular scale" (Page 4-5, Office Action 03/22/2007).

Applicants respectfully submit that the amount of experimentation required to carry out the Invention is not undue. In the Application, Figure 1 illustrates a process for producing three-dimensional nanotube structures in accordance with one embodiment of the Invention. Figures 2A-2D, and 3A-3B illustrate the layers and the entirety of the cone-shaped connector molecule in accordance with one embodiment of the Invention. Figure 4 illustrates the connection of coned-topped nanotube segments to form a three-dimensional nanotube structure in accordance with one embodiment of the Invention. Through these disclosures, a person skilled in the art would be able to obtain nanotube segments, synthesize the connector molecule, and bond it to both the nanotube segments as well as to a plurality of other connector molecules to form a three-dimensional nanotube structure.

Moreover, Applicants respectfully submit that disclosure of a working example is not required:

The specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation (*In re Borkowski*, 422 F.2d 904, 908; *see* MPEP 2164.02.)

Applicants respectfully submit that in accordance with the discussion *supra*, the Invention is disclosed in a manner that one skilled in the art will be able to practice it without an undue amount of experimentation. Based on the totality of the "undue experimentation" factors, Applicants respectfully submit that the disclosure enables a person skilled in the art to make and/or use the invention.

The Examiner has also rejected claims 1-10 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully submit that the Application conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, the Applicants were in possession of the Invention. In addition, Applicants respectfully submit that the Application describes the Invention in sufficient detail such that one skilled in the art can clearly conclude that the Applicants invented the claimed Invention. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 1-10.

Rejections Under 35 U.S.C. §102

The Examiner has rejected claims 1-2, and 6-10 under 35 U.S.C. §102(e) as being anticipated by *Smalley et al.* (U.S. Patent No. 6,790,425). Applicants respectfully submit that Applicant's Invention as claimed in claims 1-2, and 6-10 is not anticipated by *Smalley*.

Applicants teach and claim a method for producing three-dimensional nanotube structures, where a number of nanotubes are opened to create open-ended nanotube segments,

and a corresponding number of connector molecules are brought into contact with the nanotube segments. These connector molecules possess first bonding sites that bond with one end of the nanotube segments, and second bonding sites that bond with the corresponding bonding sites of a plurality of other connector molecules. That is, Applicants claim using connector molecules to bond one end of the connector molecule to one end of a nanotube segment, and using the other end of the connector molecule to bond to one end of the two or more connector molecules, where the other end of the two or more connector molecules are bonded to one end of a nanotube segment. In this way, one nanotube can be coupled to two or more other nanotubes to form a three-dimensional nanotube structure.

Applicants respectfully disagree with the rejection because *Smalley* does not disclose each and every element of the Invention as claimed in claim 1. Specifically, *Smalley* does not teach bonding one nanotube segment to two or more nanotube segments (through the use of connector molecules).

Applicants respectfully submit that the Examiner has mistakenly equated the "connector molecules" (Claim 1) in the Application with the "transitional metal catalyst atoms or particles" (*Smalley* 13, 23) disclosed in *Smalley*. In *Smalley*, the "transitional metal catalyst atoms or particles" are employed to "re-start the growth of the exposed tube ends. In this way a larger, macroscopic, ordered assembly of SWNT is grown" (*Smalley* 13, 29-31). These "transitional metal catalyst atoms or particles" are not similar to the "connector molecules" claimed by Applicants due to the difference in function. The catalyst atoms of *Smalley* are used to re-start the growth of SWNT in a linear manner. In fact, these catalyst atoms do not actually connect nanotube segments. These catalyst atoms are used to allow the growth of SWNT when exposed to carbon feed stock at an appropriate temperature and pressure. Notwithstanding the growth process, these catalyst atoms only bond to one other nanotube segment, and do not bond to two

or more nanotube segments. Because of its function, these catalyst atoms cannot be used to bond to two or more nanotube segments to form a three-dimensional nanotube structure in the manner claimed by the Application. In contrast, the "connector molecule" claimed by Applicants provides for "bonding with one end of the nanotube segments and... bonding with the corresponding bonding sites of a plurality of other connector molecules" (Claim 1). These bonds give rise to the formation of the claimed three-dimensional nanotube structure.

For these reasons, Applicants respectfully submit that claim 1 is not anticipated by *Smalley* under 35 U.S.C. §102(e). Given that claims 2, and 6-10 depend directly or indirectly from claim 1, Applicants respectfully submit that claims 2, and 6-10 are likewise not anticipated by *Smalley* under 35 U.S.C. §102(e). Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 1-2, and 6-10.

CONCLUSION

In view of the foregoing remarks, Applicants respectfully submit that the applicable rejections have been overcome. Applicants respectfully submit that the present application and all pending claims are in condition for allowance.

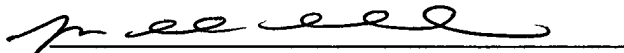
Pursuant to 37 C.F.R. §1.136(a)(3), Applicants hereby request and authorize the U.S. Patent and Trademark Office to treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time, and to charge all required fees, including extension of time fees and fees under 37 C.F.R. §§1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully Submitted,

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Date:

6/22/07



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